Adopted for Use by
the Federal Government

FIPS PUB 108

See Notice on Inside
Back Cover

Alphanumeric COM Quality Test Slide AIIM MS28-1983

NATIONAL STANDARD

1100 Wayne Avenue
Silver Spring, MD 20910
301/587-8202

Association for Information and Image Management

Foreword

(This foreword is not part of Association for Information and Image Management Standard for *Alphanumeric COM Quality Test Slide, AIIM MS28-1983.)*

This standard is to be used in conjunction with Association for Information and Image Management *Practice for Operational Practices/Inspection and Quality Control for Alphanumeric Computer-Output Microforms, ANSI/AIIM MS1-1981.* It describes in detail the requirements for preparing a form slide for use in testing the quality of COM recorder output. The form slides must be of uniform high quality if uniform results are to be achieved or if the output from various COM recorders is to be compared. This standard attempts to assure consistent quality. Any suggestions for improving this standard should be sent to the Chairman, Standards Board, Association for Information and Image Management, 1100 Wayne Avenue, Silver Spring, Maryland 20910.

This standard was developed under the auspices of the AIIM Standards Board which approved it as an Association for Information and Image Management Standard in April, 1982. The Standards Board had the following members at the time it processed and approved this standard:

John R. White, Chairman

Marilyn E. Courtot	Jeffrey Heynan
Henry C. Frey	Sam Trippe
Adolph Gawin	Paul Vaiana
Charles Heinmiller	

The Association for Information and Image Management COM Quality Standards Committee had the following members at the time it processed and approved this standard:

Chairman, Sherman H. Boyd

ORGANIZATION	REPRESENTATIVE
Bell & Howell Company	John Scarborough
Bell Telephone Labs	A. F. Pavlich Henry C. Frey, *Alternate* D. L. Shee, *Alternate*
California Computer Products, Inc.	Albert J. St. George
DatagraphiX, Inc.	Sherman H. Boyd
Dicomed Corporation	John E. Grimaldi Tom Diede, *Alternate*
Eastman Kodak Company	Marcus Phillips James Peters, *Alternate*
GAF Corporation	D. L. Jefferson
Ilford, Inc.	Stan Clay
Information International, Inc.	Max K. Muir Martin Wolnick, *Alternate*
Intergraphics, Inc.	Tom R. Paur
3M Company	Al Rouhan A. W. Kutchera, *Alternate*
National Bureau of Standards	Thomas C. Bagg
NCR Micrographic Systems, Inc.	Siegfried H. Mohr Robert W. DeGrasse, *Alternate*
Photographic Sciences Corporation	Dave Horsey
U.S. AFLC/LOLDE	Frank W. James
U.S. Department of Energy	Robert W. Ludka
Xidex Corporation	John Weaver

Standard for Alphanumeric COM Quality Test Slide

1. SCOPE

This standard describes the requirements for providing a fixed image form slide used to superimpose constant information over the output of the COM recorder dynamic display. Only the requirements for the fixed image on the original art work and the photographic image of the test object are described. Some detailed requirements for the finished slide are not included since these depend on the particular COM recorder for which the slide is intended.

2. DEFINITIONS

Definitions appropiate to this document can be found in the Association for Information and Image Management *Glossary of Micrographics, TR2-1980.*

3. REQUIREMENTS

3.1 General Description. The general configuration for the test object is shown in Figure 1. Sizes and locations of the various parts are shown in Figures 2, 3a, and 3b. The test object consists of EH test patterns, density squares, resolution charts, and sample alphabets. These are described in the following sections.

3.1.1 EH Test Patterns. Five identical patterns located at the four corners and center of the form are used for comparing the size and boldness of alpha characters. Each pattern contains an array of 20 pairs of characters (the letters E and H). Each pair of characters is identified by a grid coordinate position, rows A through D vertically and 1 through 5 horizontally. Each pair of character dimensions, based upon a full size computer page of 356 by 279 mm (14 × 11 in) with character height measured from the center line of the upper bar of the character E to the center line of the lower bar, changes progressively in the following manner: horizontally, the left pair of characters (Row 1) (E and H) are 2.0 mm high and increase in size by 0.2 mm for each successive pair so that the right pair (Column 5) is 2.8 mm high; vertically, the characters vary in line (stroke) width. All characters in each row have the same line width regardless of character height. The

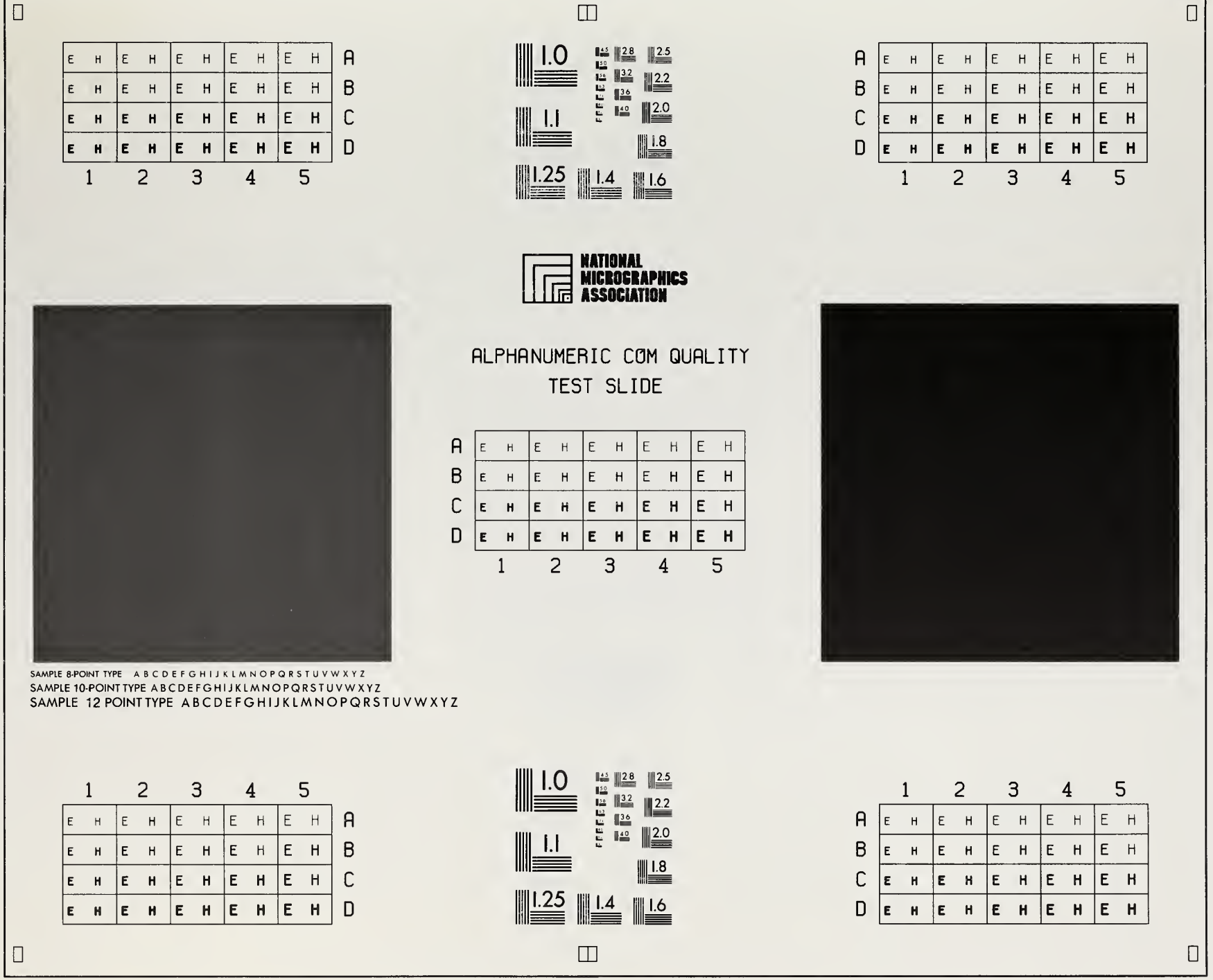

Figure 1. Artwork for Alphanumeric COM Quality Test Slide (Not to scale).

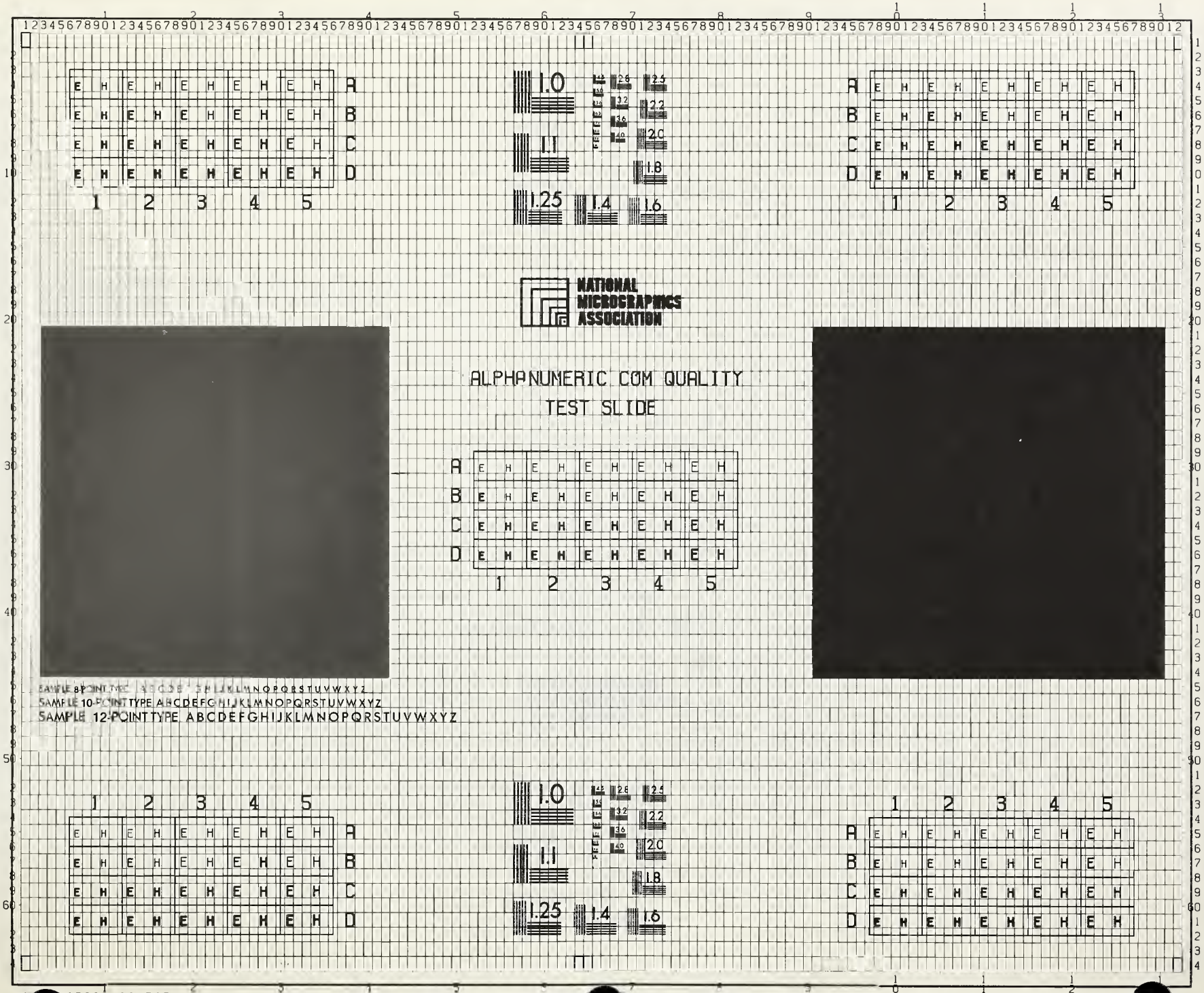

Figure 2. Form-slide layout (Not to scale).

top row (A) has a line width of 0.28 mm; the second row (B), 0.35 mm; the third row (C), 0.48 mm and the bottom row (D), 0.70 mm. Two character spaces are provided between characters horizontally, and one character line space is provided between characters vertically to simplify the alignment of the generator characters with the characters from the form slide. This also simplifies the comparison of characters from the two sources. The location of each form slide character, based on 132 characters per line and 64 lines per page, is shown in Figure 2. Rows 49 and 50 are reserved for generating the entire COM character set.

3.1.2 Density Squares. This portion of the test object consists of two square areas of prescribed density as shown in Figure 1. The right-hand square is a clear area on the slide for use with positive-appearing images (dark characters on a clear background). The left-hand square is a 50 percent, 150-line, halftone screen for use with negative-appearing images (clear characters on a dark background).

3.1.3 Resolution Test Charts. The test object shown in Figure 1 contains two resolution test charts which are modified versions of American National Standard for *Microcopying: ISO Test Chart No. 2 Description and Use in Photographic Documentary Reproduction, ANSI/ISO 3334-1979.* The charts used in the test object have been modified by deleting test pattern spatial frequencies 11, 12.5, 14, 16 and 18. These test patterns are not needed for the test object and their inclusion would greatly increase the cost of manufacture. The test charts are used for checking, as well as in optimizing the focus setting of the forms system. The artwork is described in Figures 3A, 3B and Table 1.

3.1.4 Sample Alphabet. Row 45, Figure 2, contains a sample alphabet of size 8 characters. Row 46 contains size 10 characters; and Row 47 contains size 12 characters. (See Section 3.2.7 for dimensions.)

3.1.5 Locations. The location of the various portions of the test object (described in Sections 3.1.1 through 3.1.4 and shown in Figure 2) are determined by use of the standard 132-character by 64-line grid superimposed on the test object. Overall measurements of the full-size grids are 356 mm (14.0 in) wide by 279 mm (11.0 in) high. The individual grid element measures 2.70 mm wide by 4.38 mm high.

3.1.6 Registration Guides. Eight character boxes the size of individual grid elements are shown on the test object pattern. There is one at each corner and one each at Columns 64 and 65 (Rows 1 and 64, as shown in Figures 1 and 2). These are used to properly align the alphanumerics from the image generator with the proper location on the form slide.

3.2 Detailed Requirements for Original Artwork.

3.2.1 Material. Polyester base film.

3.2.2 Line Color. Black.

3.2.3 Line Density Uniformity. Lines shall be of uniform density with no detectable breaks or irregularities.

3.2.4 Scale. Artwork shall be full scale.

3.2.5 Line Width. 0.20 mm plus or minus 5 percent.

3.2.6 Line Density. The line density shall be uniform jet black with a diffuse visual transmission density of not less than 2.0 measured in accordance with American National Standard *Conditions for Diffuse and Doubly Diffuse Transmission Measurements (Transmission Density), ANSI PH2.19-1976.* The equivalent density may be measured on a spot 3 mm or larger in diameter if the line width is too narrow to measure with a conventional densitometer having a 1 or 2 mm aperture.

3.2.7 Test Character. Five test blocks and sample alphabet are required as shown in Figure 1.

3.2.7.1 Test Pattern Characters. The dimensions of the E and H test characters are as follows (see section 3.1.1):

Height: (1) 2.0 (2) 2.2 (3) 2.4 (4) 2.6 (5) 2.8 mm
Width: (1) 1.3 (2) 1.4 (3) 1.5 (4) 1.6 (5) 1.8 mm
Stroke Width (A) 0.28 (B) 0.35 (C) 0.48 (D) 0.70 mm

3.2.7.2 Sample Alphabet (Rows 45, 46, and 47).*

	Size 8	Size 10	Size 12
Height of E	1.8	2.1	2.8 mm
Width of E	1.0	1.2	1.6 mm

Test Pattern Labels: (A-D and 1-5) 4.2 mm high 2.5 mm wide
Title Characters: 4.2 mm high 2.5 mm wide

3.2.8 Density Squares. Size 100 mm square (4 in. nominal). The density of the dark square shall be not less then 2.0. The light square shall be a 50 percent, 150 line halftone screen.

3.2.9 Resolution Targets. There shall be two resolution targets located as shown in Figure 1. The target type shall be as specified in ANSI/ISO 3334-1979, as modified by section 3.1.3 and shall have the detailed configuration as shown in Figure 3A, 3B, and Table 1.

3.3 Detailed Requirements for the Form Slide.

3.3.1 Material. The form slide shall be a dimensionally stable photosensitive material having a resolving power sufficient to meet the requirements of this specification.

3.3.2 Reduction Ratio. The reduction ratio used to prepare the form slide depends upon the particular COM recorder for which the the form slide is being prepared. The form slide reduction ratio tolerance shall be 0.5 percent of that specified by the equipment manufacturer.

3.3.3 Form Slide Quality. There shall be no defects or pinholes greater than 0.0013 mm in any dimension. The image area shall be free of scratches, digs, abrasions or other defects.

3.3.4 Photographic Quality. The opaque areas shall have a density of 2.0 or higher. Lines and symbols shall be clear and uniform, with no detectable breaks or irregularities. The 1.0 through 10 target on the resolution chart shall satisfy the tolerance given in Table 1.

3.3.5 Finished Slide. The finished form slide shall be suitable for use as specified by the COM recorder manufacturer.

3.3.6 Slide Packaging. The finished slide shall be packaged in a container which will adequately protect it from shipping damage and abrasion.

3.3.7 Manufacturer's Certification. A certificate shall accompany each slide, showing the serial number and certifying that the slide meets the requirements of this standard.

4. STANDARDS REFERRED TO IN THIS DOCUMENT

American National *Practice for Operational Practice/Inspection and Quality Control for Alphanumeric Computer-*

*These are nominal dimensions. A medium sans serif font shall be used.

Table 1. Dimensions and tolerances of test patterns

Test pattern spatial frequencies	1,0 1,1 1,25 1,4 1,6 1,8 2,0 2,2 2,5 2,8 3,2 3,6 4,0 4,5 5,0 5,6 6,3 7,1 8,0 9,0 10
Tolerance on spatial frequency	The length of four full cycles shall be within ± 3 % of the nominal length of four cycles
Tolerance on $\frac{\text{line length}}{\text{line width}}$	± 5 %
Tolerance on $\frac{\text{line width}}{\text{space width}}$	1 to 10 line pairs/mm incl. : ± 5 %

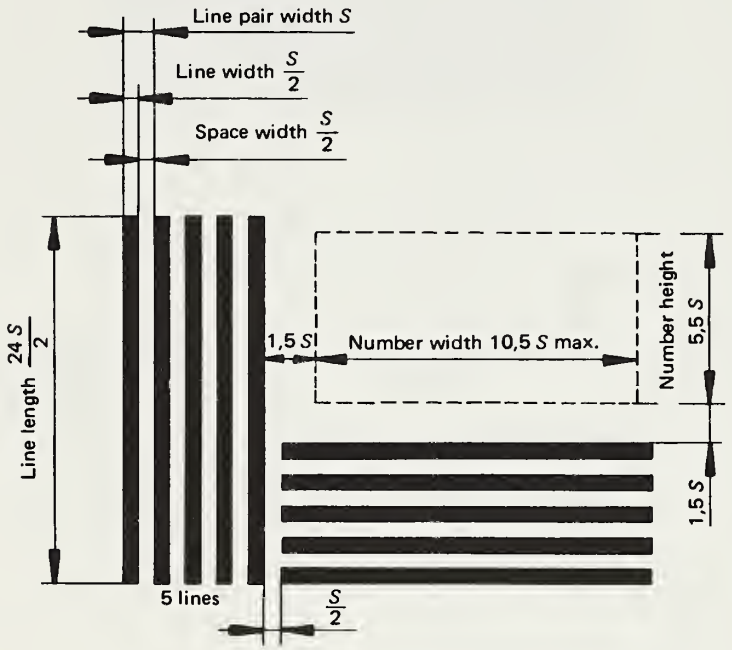

Figure 3A. Resolution test pattern

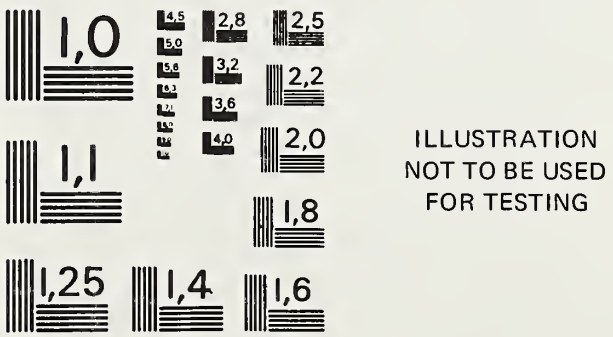

Figure 3B. Arrangement of Test patterns in ISO test chart No. 2 (actual size)

Output Microforms, ANSI/AIIM MS1-1981, Silver Spring, MD: Association for Information and Image Management, 1981.

American National *Practice for Operational Procedures/ Inspection and Quality Control of First Generation Silver-Gelatin Microfilm of Documents, ANSI/AIIM MS23-1983.* Silver Spring, MD: Association for Information and Image Management, 1983.

American National Standard *Conditions for Diffuse and Doubly Diffuse Transmission Measurements (Transmission Density), PH2.19-1976.* New York, NY: American National Standards Institute, 1976*.

American National Standard *Microcopying: ISO Chart 2: Description and Use in Photographic Documentary Reproduction, ANSI/ISO 3334-1979.* New York, NY: American National Standards Institute, 1978.

Note: American National Standards and Association for Information and Image Management Standards are available from Publications Sales, Association for Information and Image Management, 8719 Colesville Road, Silver Spring, MD 20910 (301/587-8202). ANSI standards marked with an asterisk (*) can be ordered only from ANSI. Write American National Standards Institute, Standards Sales, 1430 Broadway, New York, NY 10018.

This standard has been adopted for Federal Government use.

Details concerning its use within the Federal Government are contained in Federal Information Processing Standards Publication 108, Alphanumeric Computer Output Microform Quality Test Slide. For a complete list of the publications available in the Federal Information Processing Standards Series, write to the Standards Processing Coordinator (ADP), Institute for Computer Sciences and Technology, National Bureau of Standards, Gaithersburg, MD 20899.

AIIM MS28-1983

International Standard Book Number 0-89258-081-X